I CLAIM:

1. A method for the topology-discovery and organization of a plural-node communication network comprising

selecting a central coordinator node (CCo) from a collection of nodes initially lacking a CCo,

thereafter employing the selected CCo to conduct a procedure for discovering, from the mentioned collection of nodes, all nodes which are optimally capable of being organized into a network, wherein all such discovered capable nodes may effectively be organized to communicate with all other nodes, and

with respect to such discovered, capable nodes, creating a network-global connectivity database in the form of a network-organizing communication topology table that describes enablement of bidirectional communication between all nodes.

2. The method of claim 1, wherein the discovering procedure includes discovering both non-hidden and hidden nodes.

3. The method of claim 2, wherein the discovering procedure further includes discovering suitable proxy nodes which are non-hidden nodes, and which will stand as CCo surrogates for communication between the CCo and selected hidden nodes, and will do so in a manner whereby all hidden nodes can effectively communicate with the CCo.

4. The method of claim 3 which further includes enabling communication between the CCo and each hidden node via an intermediary proxy node.

5. The method of claim 1 which further comprises, at a point in time which follows initial creation of the mentioned topology table, conducting an exercise to confirm the appropriateness of the currently selected CCo, and if such appropriateness is not confirmed, to perform a transfer of CCo responsibilities from the current CCo to a newly selected CCo.

6. A method for organizing a centralized communication network which includes a central coordinator node (CCo) comprising

under the control of the CCo, discovering all other nodes, including both hidden and non-hidden nodes, which are optimally capable of becoming part of a network in which each node can effectively communicate with every other node, and

with respect to such discovered nodes, establishing certain non-hidden nodes as proxy intermediaries that enable communication between the CCo and the so-discovered hidden nodes.

7. A method for self-organizing, from a group of nodes, a centralized communication network where the group initially lacks a central coordinator node (CCo) comprising

engaging initially in a nominally non-transmission listening-mode period to detect the presence of a beacon,

following the listening-mode period, if no beacon has been detected, allowing an initial transmission-mode period wherein the first node to transmit declares itself to be the CCo, and

after such a declaration, organizing the group of nodes into a network reflected by a topology table wherein each node can effectively communicate with every other node.

8. The method of claim 7, wherein enabled node-to-node communication is bi-directional.

9. The method of claim 7, wherein said organizing includes admitting to the network both non-hidden and hidden nodes, and establishing, from the collection of non-hidden nodes, a proxy node intermediate each hidden node and the CCo.

10. The method of claim 7, wherein said organizing includes engaging in a discovery-mode period wherein each node creates a disconnected-node list which it communicates to the CCo, and the topology table is constructed on the basis of such communicated discover-node lists.

11. The method of claim 7, wherein, at a point in time which is after the time of performing the process of organizing, the status of the then self-declared CCo is subject to a process of confirmation.

12. A method for organizing, from a group of nodes, a centralized communication network comprising

identifying nodes in the group which are optimally capable of becoming organized into a network, and

then arranging such identified nodes into categories of enabled communication, in one of which categories all nodes can communicate directly with one another, and in another of which categories certain nodes can communicate with certain other nodes only through at least one intermediary, proxy node.

13. A method for organizing, from a group of nodes, a communication network based upon the assumption that the organized network will include a central coordinator, said method comprising

determining which nodes in the group are optimally capable of becoming organized into a desired network,

enabling the so-determined nodes effectively each to learn (a) the identities of other nodes in the group which have also been so determined, and (b), with respect to all of these so-determined nodes, the respective qualities of communication links that directly exist between pairs of the nodes, and

on the basis of such learning, creating a discovered topology table which provides a guiding tool for the current definition and formation of the desired network.

14. A method for organizing, from a group of nodes, a communication network based upon the assumption that the organized network will include a central coordinator, and in a setting wherein each node in the group has topology knowledge regarding (a) the identities of all other nodes in the group, and (b) the respective qualities of communication links that directly exist between different ones of these nodes, said method comprising

performing an analysis of such topology knowledge to identify the most appropriate candidate node to perform, in at least the immediate future, the role of a central coordinator node, and

following said performing, collectively engaging plural nodes in the group in the selection of that candidate node to be the then-designated central coordinator node.

15. The method of claim 14, wherein the activity involving selection includes a Maximum Coverage criterion which is applied to determine the node in the network which supports bi-directional links with the maximum number of nodes.

16. The method of claim 14, wherein the activity involving selection includes a Maximum Capacity criterion which is a applied to determine the node in the network which exhibits the most desirable throughput characteristics.

17. The method of claim 14, wherein the activity involving selection includes a Device Class criterion which is applied to determine which node in the network possesses the highest class among the nodes.

18. The method of claim 14, wherein the activity involving selection includes a Lowest Duty Cycle criterion which is applied to determine the node in the network which is characterized with having the highest percentage of time available for attending to network control functions.

19. The method of claim 14, wherein the activity involving selection includes a combination of plural criteria selected from the list including (a) Maximum Coverage, (b) Maximum Capacity, (c) Device Class, and (d) Lowest Duty Cycle.

20. A network method for self-organizing a group of nodes into a communication network where the nodes are all operatively connected to a shared communication medium, certain nodes may be hidden nodes, and there is an initial assumption that there is no central coordinator node, said method comprising

engaging in a discovery process to identify the qualities of direct and indirect internodal communication capabilities, and

as a consequence of said engaging, establishing, as desired, at least one proxy node to facilitate bi-directional communication with any hidden nodes.

21. The method of claim 20, wherein the following algorithm is employed in the establishment of a proxy node:

1. Let S_{PCo} represent the set of Proxy Coordinator nodes.

2. For each node $k \in D_i$ for some $D_i \in T_{CCo}$, *and* $k \notin N$, if there exists a node $j \in N$, and $j \in S_{PCo}$, and $j <=> k$, then j is the PCo for node k.

3. For each node $k \in D_i$ for some $D_i \in T_{CCo}$, *and* $k \notin N$, if there exists a node $j \in N$, and $j \notin S_{PCo}$, and $j <=> k$, then j is designated the PCo for node k and added to the set of PCos, S_{PCo}.

4. For each node $k \in D_i$ for some $D_i \in T_{CCo}$, *and* $k \notin N$, if there DOES NOT exist a node $j \in N$, and $j <=> k$, then the hidden node k cannot be reached by any node in the network N and therefore has no PCo.